Dec. 3, 1957 R. F. BEEREND 2,814,921

APPARATUS FOR PACKAGING SAUSAGE PATTIES

Filed Jan. 20, 1955 4 Sheets-Sheet 1

Fig. 1

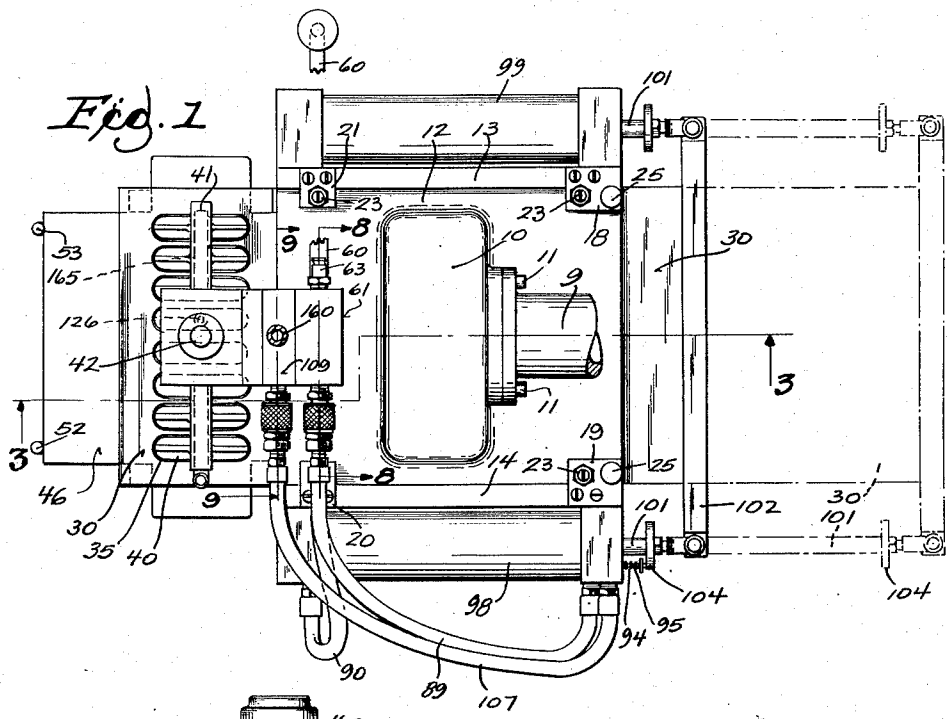
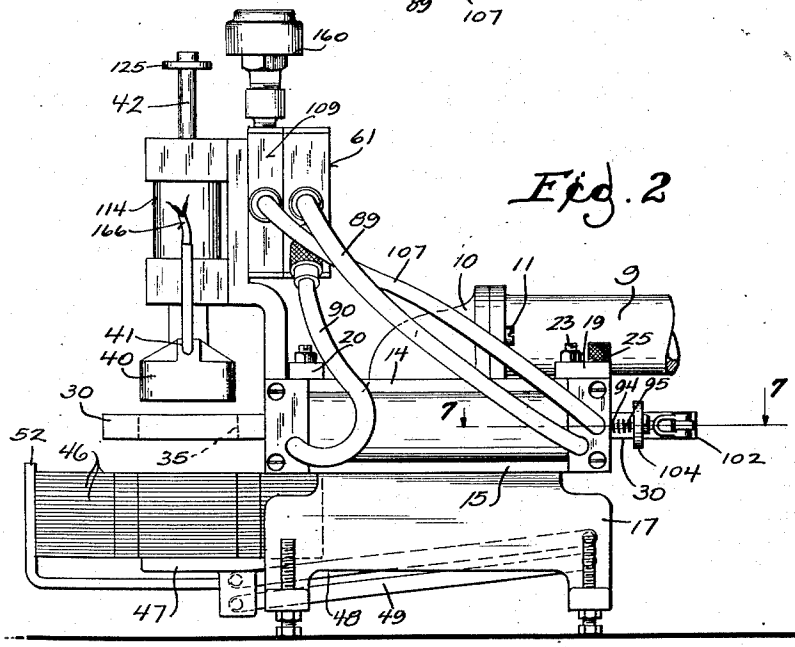


Fig. 2



INVENTOR.
RAY F. BEEREND
BY
Wheeler, Wheeler & Wheeler
ATTORNEY

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APPARATUS FOR PACKAGING SAUSAGE PATTIES

Filed Jan. 20, 1955 4 Sheets-Sheet 2

Fig. 3

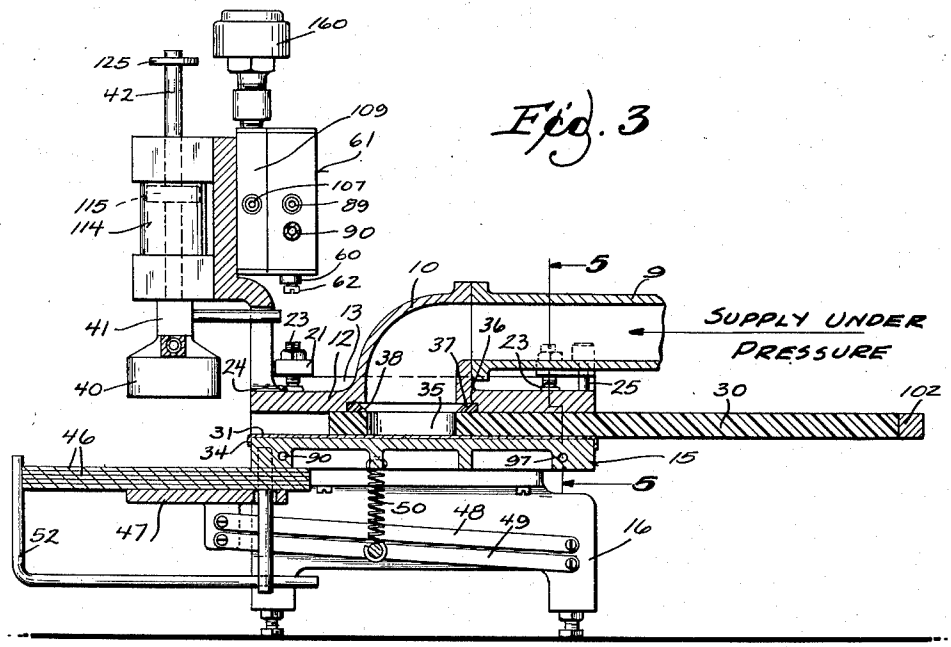
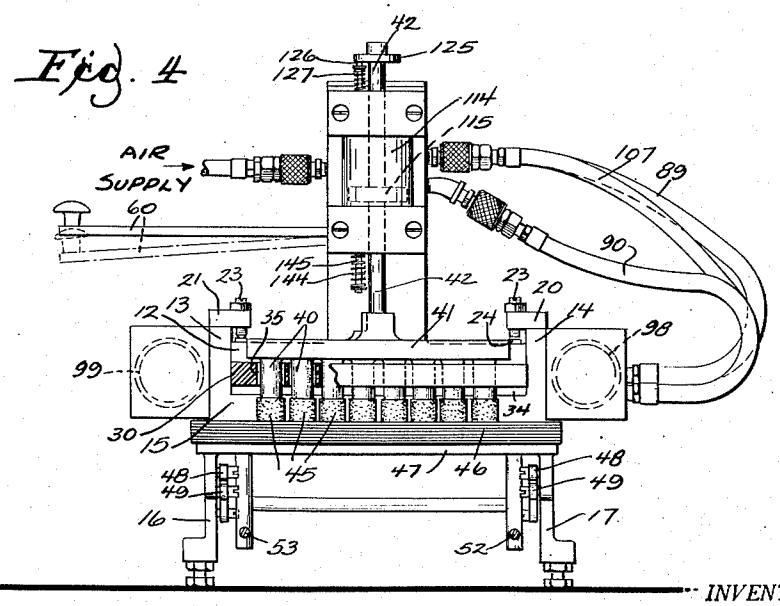


Fig. 4



INVENTOR.

RAY F. BEEREND

BY

Wheeler, Wheeler & Wheeler

ATTORNEY

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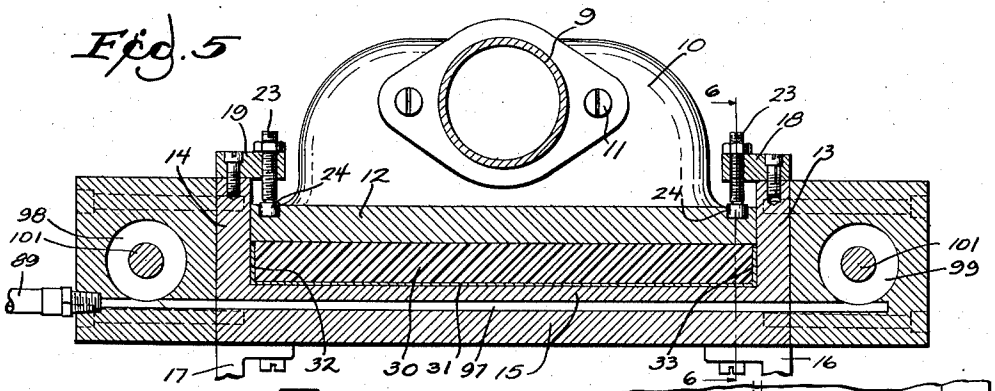
APPARATUS FOR PACKAGING SAUSAGE PATTIES

Filed Jan. 20, 1955 4 Sheets-Sheet 3

Fig. 5



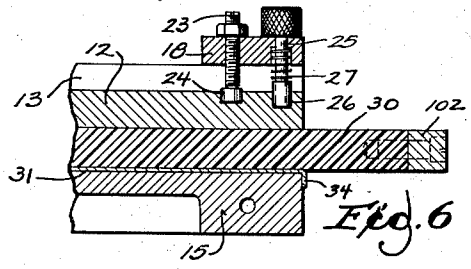


Fig. 6

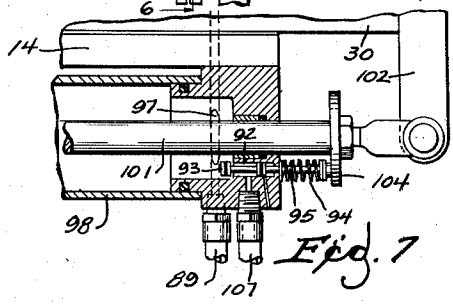


Fig. 7

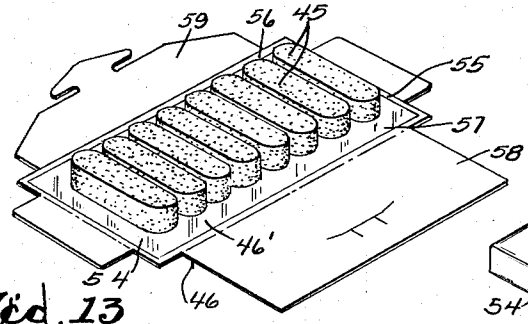


Fig. 13

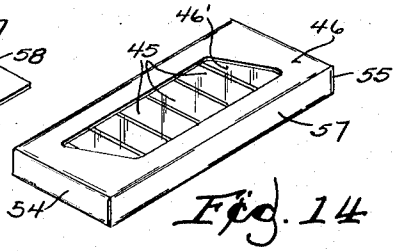


Fig. 14

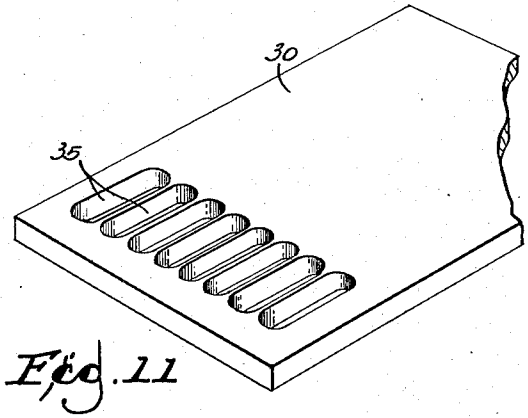


Fig. 11

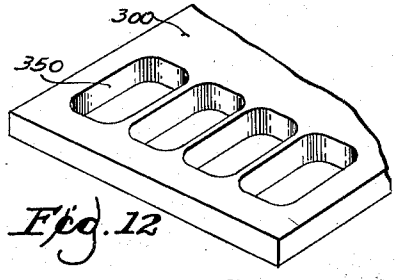


Fig. 12

INVENTOR.
RAY F. BEEREND
BY
Wheeler, Wheeler & Wheeler
ATTORNEY

Dec. 3, 1957 R. F. BEEREND 2,814,921

APPARATUS FOR PACKAGING SAUSAGE PATTIES

Filed Jan. 20, 1955 4 Sheets-Sheet 4

Fig. 8

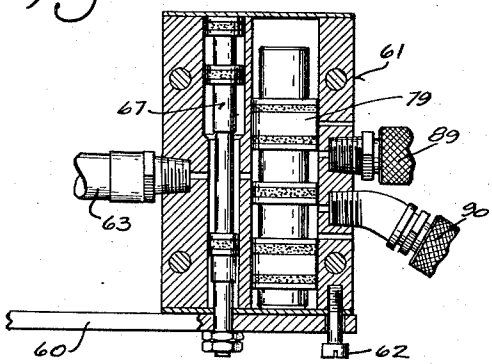
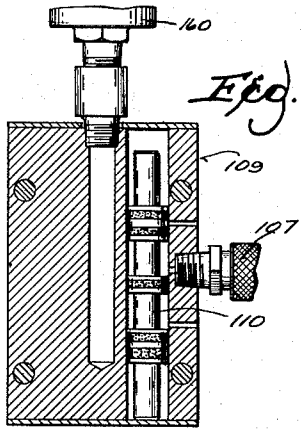


Fig. 9



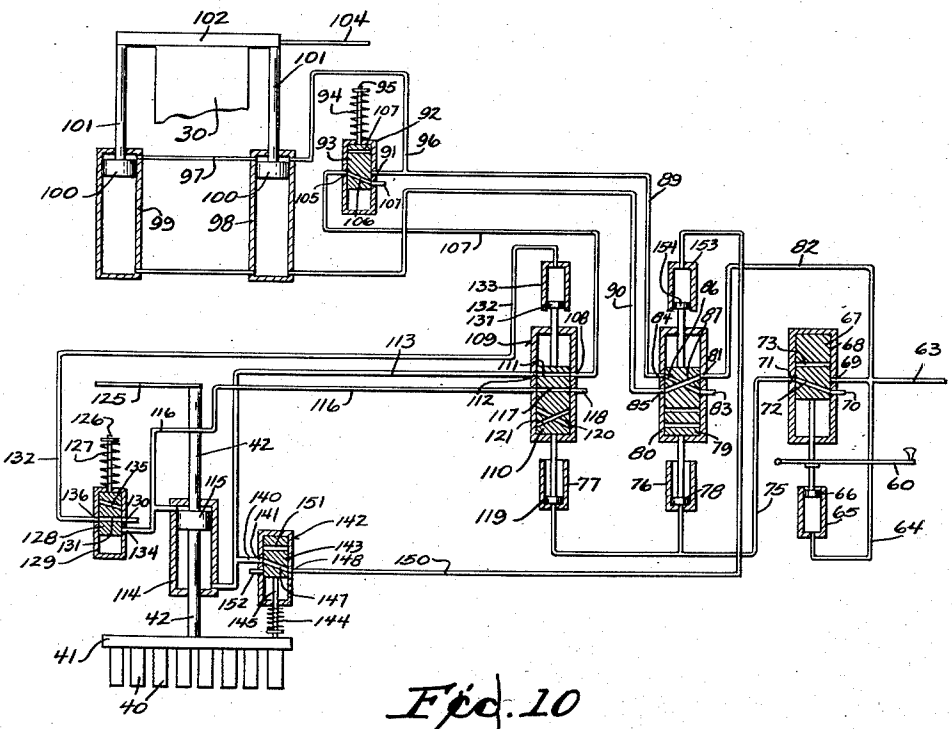


Fig. 10

INVENTOR.
RAY F. BEEREND
BY
Wheeler, Wheeler & Wheeler
ATTORNEYS

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2,814,921

APPARATUS FOR PACKAGING SAUSAGE PATTIES

Ray F. Beerend, Vermilion, Ohio

Application January 20, 1955, Serial No. 482,969

22 Claims. (Cl. 53—122)

This invention relates to an apparatus for packaging sausage patties. The present application is a continuation in part of my application 384,200, filed October 5, 1953 under the same title.

Using a conventional sausage stuffing machine as a means for supplying the plastic sausage meat under pressure, I receive the meat into the successive openings of a mould slide as the slide reciprocates over the meat supply port. The openings will be substantially filled in the retracting movement of the slide but will again traverse the filling zone in the advancing movement of the slide so that any deficiency in any one of the mould openings will be made up in the second traverse.

At the extreme position of advance of the slide, it is allowed to dwell over the uppermost carton blank in a stack of blanks. While the slide dwells over the stack of blanks, a group of ejector dies descends through the openings of the slide to eject the individual patties onto the top blank of the stack.

Whereas the device of my former application was manually operated, the present devices operates automatically to complete a single cycle each time the control lever is tripped by the operator. In addition, there are specific improvements in the packing for the mould slide. No claim is made in the present application to the pneumatic control valves per se.

The pressure support for the carton blanks holds the uppermost blank in the stack against a stop at a spacing which is below the slide to an extent which is at least equal to the thickness of the individual patties. Hence, as soon as the ejector dies are retracted from the slide, the slide is free of the deposited patties for retraction across the filling zone to initiate another cycle of operations. Meantime the carton blank with the patties deposited thereon is withdrawn and flaps thereof constituting the sides, ends and bottom of the carton are folded over the patties to complete the enclosure thereof. The finished carton is then turned to upright position. The panel portion upon which the patties are deposited is actually the top of the finished carton. It is desirably windowed so that the patties enclosed in the carton are displayed through the window.

In the drawings:

Fig. 1 is a plan view of apparatus embodying the invention.

Fig. 2 is a view in side elevation of the device shown in Fig. 1.

Fig. 3 is a view taken in section on the line 3—3 of Fig. 1.

Fig. 4 is a view of the device in end elevation, portions being broken away.

Fig. 5 is an enlarged detail view taken in section on the line 5—5 of Fig. 3.

Fig. 6 is a fragmentary detail view taken in section on the line 6—6 of Fig. 5.

Fig. 7 is a detail view taken in section on the line 7—7 of Fig. 2.

Fig. 8 is a detail view taken in section on the line 8—8 of Fig. 1.

Fig. 9 is a detail view taken on the line 9—9 of Fig. 1.

Fig. 10 is a diagram of the fluid circuit connections.

Fig. 11 is a fragmentary view of the mould slide in perspective.

Fig. 12 is a fragmentary view of a modified embodiment of the mould slide as it appears in perspective.

Fig. 13 is a view in perspective showing the work pieces embodied on the carton forming blank.

Fig. 14 is a view of the completed carton as it appears in perspective.

My device is designed as an attachment for the filling nozzle 9 of a sausage stuffing machine which is adapted to supply sausage meat under pressure, as from a feed screw (not shown). To the nozzle 9, I attach the pressure head 10 of my apparatus by means of cap screws 11 or the like.

The pressure head 10 is carried by a plate 12 as best shown in Figs. 3 and 5. This plate fits closely between the upstanding flanges 13, 14 of a base member 15 supported by legs 16, 17. Screwed to the upper margins of flanges 13, 14 are plates 18, 19, 20, 21 (Figs. 1, 5 and 6, respectively) carrying set screws 23 adjusted into pressure engagement with pads 24 in the cover plate 12 to exert any desired downward pressure on plate 12. In addition, the plates 18, 19 are provided with headed dowel pins 25 engaged in sockets 26 of the cover plate 12 and manually withdrawable from such engagement against compression of springs 27 (see Fig. 6).

Under pressure of the set screws 23, the plate 12 tightly engages the upper surface of the mould slide 30 which is reciprocable in the channel provided by the base member 15 and its upstanding flanges 13, 14. An appropriate liner is desirably provided at 31 to minimize the friction between the slide 30 and the base member 14. The liner is positioned by upstanding lateral flanges 32, 33 and depending end flanges 34 which engage the ends of the base member 15 as best shown in Fig. 3 and Fig. 6. The liner or packing sheet 31 may be of any appropriate material. I have found "Bakelite" to be a good material for the purpose, as it not only provides tight packing but reduces friction in the movement of the slide.

The slide 30 is provided with mould openings at 35 in which the work pieces are formed as the material is delivered under pressure through the pressure head 10 into the openings when the slide is retracted to the position shown in Fig. 3 so that the openings register with the head. A cavity is provided at 36 in the pressure plate 12 around the opening from the head to receive a packing sheet 37 which has openings registering with the openings 35 of the slide as best shown in Fig. 3, and has beveled margins at 38 around each such opening so that the pressure of the material supplied through the pipe 9 to the pressure head 10 is directed against this beveled surface to hold the packing member 37 in intimate pressure engagement with the upper surface of slide 30.

The slide 30 and the correspondingly apertured packing member 37 (as well as the ejector dies) are readily interchangeable when it is desired to make work pieces of different dimensions. An alternatively usable slide is fragmentarily illustrated at 300 and it will be observed that the openings 350 therein are quite radically different in size and shape from the openings 35 in slide 30 as shown in Fig. 11. It will be understood that for each type of opening provided in slide 30 there will be a correspondingly apertured packing member 37 desirably having, in all instances, beveled margins at 38 about the openings therein provided.

Dismantling of the machines for cleaning or for the interchange of slides, requires only a few moments, since the retraction of the dowel pins 25 permits the pressure

plate 12 to be slid from beneath the set screw 23, whereupon the slide is completely accessible and may be freely removed upon separation from the slide-actuating mechanism presently to be described.

As explained in the companion application above identified, the retracted slides 30 or 300 receive a charge of material from the pressure head 10 when the slide openings 35 register with the head at the corresponding ports in the packing member 37. As the slide advances from the retracted position shown in Fig. 3, to the delivery position shown in Fig. 1, its apertures register with the normally elevated expulsion dies 40 which are carried by a cross head 41 mounted on plunger 42. As these dies descend from the elevated position in which they are shown in Figs. 2 and 3 to the lowered position of Fig. 4, they pass through the openings 35 in the mould slide 30 (or 300) to expel the work pieces 45 therefrom.

In the preferred embodiment of the invention, windowed carton blanks 46 are mounted, face down, in a pile on the spring-supported table 47. This table is carried by parallel links 48, 49 and is biased upwardly by spring means at 50 (Fig. 3). Suitable guide arms 52, 53 hold the carton blanks in registry to receive the several work pieces on their inner windowed surfaces as best shown in Fig. 13. When the end walls 54, 55 and the side walls 56, 57 of the blank are erected and the back flaps 58, 59 interlock about the work pieces or patties 45, the carton will be inverted to make a package as shown in Fig. 14, with the work pieces or patties 45 visible through the window 46'. In each operation of the machine, a complete filling of work pieces will be deposited on a blank. During the retractive movement of the mould slide, the operator will remove the blank and erect and close it about the work pieces to the form of Fig. 14, leaving the next successive blank exposed to receive a subsequent charge of work pieces in the next cycle.

The cycling of the machine is manually initiated by means of control lever 60 which is shown in full lines in its normal position in Fig. 4 and appears in broken lines in the position in which it is manually depressed by the operator to initiate the cycle. As shown in Fig. 8, the lever 60 has a loose pivotal connection at its inner end to the valve housing 61, such connection being provided by passing a screw 62 loosely through an aperture in the lever 60. Air applied under pressure through the pipe 63 is admitted through vent 64 to a cylinder 65 in which there is a piston 66 which not only supports the lever 60 but also supports the valve piston 67 in the valve cylinder 68.

Valve cylinder 68 has an air pressure inlet port at 69, a vent at 70 and a controlled air port at 71. In the normal elevated position of the valve piston 67 shown diagrammatically at 10, the duct 72 through the valve piston 67 maintains the controlled port 71 in communication with the vent port 70. When the lever 60 is depressed from the position shown in Fig. 10 against the pressure of the air in cylinder 65, the valve duct 73 places the pressure port 69 in communication with the controlled port 71 to deliver pressure through a line 75 to the cylinders 76 and 77. Having thus manipulated the lever 60, the operator will release the lever and the machine will thereupon complete a cycle of operation automatically without further attention on the part of the operator.

The pressure thus admitted to the cylinder 76 will act on the piston 78 to advance valve piston 79 and valve cylinder 80 from the retracted position shown. Valve cylinder 80 has a pressure port 81 constantly supplied with pressure through line 82 from the air supply line 63. It has a vent at 83 and controlled ports 84 and 85. There are cross connecting ducts 86 and 87 in the piston which, in the normally retracted position of the valve piston 79, place pressure port 81 in communication with controlled port 85 and place vent port 83 in communication with controlled port 84. The controlled port 84 communicates through duct 89 with port 91 of a reversing valve cylinder 92 equipped with a valve piston 93 normally retained in retracted position of Fig. 10 by means of a compression spring 94 acting on the valve stem 95. Duct 89 also communicates through branch duct 96 and cross-connection duct 97 with the end portions of the cylinders 98 and 99 in which the pistons 100 are reciprocable for the operation of the mould slide 30 or any substituted slide 300. The pistons 100 have piston rods 101 connected together by a cross head 102 detachably screwed to the rear end of the slide. One of the piston rods has a valve actuator 104 which, in practice, takes the form of a collar shown in Fig. 1 but is diagrammatically illustrated in Fig. 10 as a laterally projecting arm. This valve actuator is so positioned that in the extreme inner position of the slide 30, it will engage the valve stem 95 to move the valve piston 93 from the retracted position of Fig. 10 to an advanced position in which the air supply connections through the controlled port 105 of valve cylinder 92 will be reversed. Port 105 normally communicates through valve duct 106 with vent 107. When the piston 93 is advanced by the operation of valve actuator 104, the cross duct 107 of the piston places the control port 105 in communication with duct 91, whereby pressure is admitted to the line 103 leading to the port 108 of knockout valve cylinder 109.

In the illustrated retracted position of the valve piston 110, the valve cylinder 109, the cross duct 111 in piston 110 place port 108 in communication with controlled port 112 from which duct 113 leads to the lower end of ram cylinder 114 in which piston 115 is mounted on the plunger 42 of the cross head 41 which carries the knockout dies 40. In the position in which the parts are illustrated, the pressure communicated to the various valve arrangements disclosed has elevated the piston 115 in cylinder 114 so that the knockout dies are in retracted position. At the same time, the upper end of knock-out cylinder 114 is vented through line 116 and valve duct 117 and vent port 118 of the knockout valve cylinder 109.

However, as already noted, the illustrated position of piston 110 is not the position in which such piston is disposed in cylinder 109 at this stage. Operation of the manual control lever 60 and admission of pressure to line 75 has not only elevated piston 78 in cylinder 76 but has elevated piston 119 in cylinder 77, whereby valve 110 has been advanced from the position shown in Fig. 10 to a position in which the cross connection ducts 120 and 121 are effective to connect line 116 to the port 108 and vent duct 118 with port 112. Thereby the vent 118 is not connected with line 116 but with line 113.

Accordingly, at the time the valve piston 93 is displaced in cylinder 92 by the movement of the mould slide, the knockout valve connections are such that the pressure admitted to the line 108 is communicated through line 116 to the upper end of cylinder 114 to move the knockout die plungers 40 downwardly to discharge the work pieces on to the package blanks, as already described.

When such discharge is complete, a valve actuator 125 carried by plunger 42 strikes the valve stem 126 to depress it against the spring 127 whereby to displace the piston valve 128 in cylinder 129 from the retracted position in which the parts are illustrated in Fig. 10. In the illustrated retracted position, the vent port 130 communicates through valve duct 131 with line 132 leading to the valve actuating cylinder 133. In the advanced position of the piston 128, the cylinder port 134, supplied with pressure through line 116, is placed in communication by means of the valve duct 135 with line 132 through the controlled port 136. The resulting pressure communicated through duct 132 to the valve-actuating cylinder 133 displaces the piston 137 back to the retracted position in which it is illustrated, thereby moving the valve 110 to break the pressure connection to

line **116** and to restore pressure connection to line **113**, whereby the knockout plungers **40** are retracted.

The line **113**, now subject to pressure, has a branch **140** leading to the port **141** of valve controlled cylinder **142**. The piston **143** in this cylinder is normally advanced by compression spring **144** about the stem **145**, and is in the path of retractive movement across port **141** so that the retractive movement of the knockout plungers **40** will ultimately move the valve piston **143** to the position illustrated in Fig. 10 wherein the cross connection duct **147** places port **141** in communication with the control port **148** leading to line **150**. In the normal position to which valve piston **143** is advanced by its spring **145**, the cross connection duct **151** of the piston registers with port **148** and with vent port **152** whereby line **150** is vented.

Admission of pressure to line **150**, consequent upon full retraction of the knockout dies **40**, supplies pressure to valve controlled cylinder **153** to advance the piston **154** therein to the position in which it is illustrated in Fig. 10. This will vent lines **89** and **96** and will admit pressure to line **90** which leads to the outer ends of cylinders **98** and **99**, whereby the slide **30** will be retracted to its original position, thus completing the cycle in readiness for initiation of another cycle by a subseqeunt manipulation of the control lever **60** by the operator.

Reference characters used on the parts shown in the diagram of Fig. 10 have been applied, where applicable, to the mechanical structure. However, it should be noted that the mechanical structure is not necessarily identical with the diagram and, since the mechanical structure of the valves is not claimed per se, it is unnecessary to the present application that it be described in detail.

The several vents are desirably connected to pass through a discharge stack **160** which may also comprise a silencer. The cross connecting ducts which, for the purposes of the diagram, are shown within the valve pistons **79** and **110** may, in practice, be built into the cylinders rather than the piston **79**. The actual structure of typical valves will be found in Figs. 7, 8 and 9.

The slide-operating cylinder and piston assemblies are desirably mounted at the sides of the channel-shaped housing in which the slides reciprocate, the cylinder heads being screwed to the flanges **13** and **14** as best indicated in Figs. 1 and 5. Valve cylinders, separately illustrated in the diagram, Fig. 10, may actually comprise bores as shown, for example, in the case of the cylinders **92**, which, in practice, constitute a bore at the head of the cylinder **98**, as shown in Fig. 7.

As in the device of the companion application above identified, the knockout or ejector dies are desirably heated to prevent the material from adhering thereto. This is accomplished by the provision in the cross head **41** of a resistance element shown only in dotted lines at **165** in Fig. 1 and having electrical wiring connections **166** as indicated in Fig. 2.

I claim:

1. The combination with a slide having a plurality of mould openings, of a moulding chamber through which the slide is reciprocable between retracted and advanced positions, said chamber having a surface provided with port means across which the mould openings move forth and back in the course of slide reciprocation and means for supplying plastic material through said port means under substantially continuous pressure to fill the mold openings in the slide, the said openings being substantially filled in the course of slide retraction across said supply port means and being adapted to receive further material if needed to complete the filling in the course of advancing movement of said slide across said port means.

2. The device of claim 1 in which said chamber comprises a movable wall in bearing contact with the slide, and means for biasing said wall in pressure engagement with the slide and for limiting movement of the wall from the slide in opposition to said bias.

3. The combination with a mould chamber provided with top and bottom walls, one of which walls has a pressure supply opening, a slide reciprocable through said chamber between said walls, one of said walls being yieldably mounted and provided with means biasing it into pressure engagement with the slide, the slide having a plurality of mould cavities opening through the slide toward the top and bottom walls and positioned to register with the supply opening of said chamber in the course of slide reciprocation, a die carrier disposed beyond said chamber in the path of slide reciprocation, a set of dies mounted on the carrier in positions to register with the mold cavities of the slide, means guiding the carrier for vertical reciprocation with said dies for the movement of the dies substantially through the mould cavities of the slide to eject the contents therefrom, means for reciprocating the carrier in the advanced position of the slide to move the dies into said cavities, and means for the support of a stack of blanks beneath said carrier in a position such that successive blanks uppermost in said stack are adapted to receive the contents ejected from the several mould cavities in the operation of the carrier.

4. The device of claim 3 in which the means for the support of the stack of blanks comprises a yieldable bed, means urging said bed upwardly toward the path of reciprocation of the slide, a stop limiting the upward movement of the stack and bed and means for retracting the bed to free the uppermost blank of said stack from contact with said stop.

5. The device of claim 3 in which the blanks of said stack comprise inverted box blanks having panels adapted to be erected about the materials deposited on the blank from said moulds and flaps connected with certain of said panels and adapted to be connected over the contents of the blank to comprise a carton enclosing the articles received from the mould cavities.

6. The device of claim 3 in which the several blanks comprise windowed panels upon which articles are deposited from the mould cavities, side and end wall panels marginally connected with the windowed panel and adapted to be erected to comprise a carton sides and ends, and flaps marginally connected with certain of said last mentioned panels and adapted to be connected to each other across the articles deposited on the first mentioned panel to constitute a closure for a carton in which said articles are enveloped, the windowed panel serving as a top for such carton upon the closing and inversion thereof.

7. In a device of the character described, the combination with a forming chamber having an apertured wall and an elbowed pressure connection to its aperture, a slide reciprocable through said chamber and provided with a series of mould cavities opening upwardly and downwardly therethrough and adapted in the reciprocation of the slide to traverse said wall aperture to receive materials supplied under pressure therethrough, bracket means projecting from the chamber at an end thereof in the direction of slide advance, a die carrier having means guiding it for vertical reciprocation and mounted on said bracket means, dies mounted on said carrier and registrable with the mould cavities of the slide when the slide is in an advanced position, means for heating the dies to a temperature sufficient so that material acted on thereby will not adhere to the dies, a yieldable bed provided with means mounting it for reciprocation on said bracket means, means urging said bed upwardly toward the path of slide reciprocation, said bed being adapted to support a stack of wrapping blanks, stop means extending along the path of slide reciprocation at one side thereof in a position to engage the uppermost blank of the stack while leaving such uppermost blank exposed beneath the slide to receive material ejected from the mould cavities by the dies and means for retracting the bed to free said uppermost blank from said stop for withdrawal from the stack with the articles deposited thereon by the operation of the dies.

8. An automatically cycling machine for producing moulded articles in successive manually initiated cycles, said machine comprising a ported mould slide, a chamber in which such slide is mounted for reciprocation, said chamber having a pressure supply inlet port with which the port of the slide registers in a retracted slide position, a knockout die registrable with the slide port in an advanced slide position, means supporting such die for reciprocation to and from the slide port for the ejection of a work piece moulded therein, means communicating with the pressure port of said chamber for supplying plastic material to be moulded in the port of said slide, manually controlled means for initiating forward movement of said slide from the retracted position to the advanced position thereof, and means for automatically causing the advance of the knockout die upon registration of the slide port therewith and for causing the retraction of the knockout die and the subsequent retraction of the slide to its initial retracted position to receive a fresh charge of plastic material from said supply means, and means for arresting slide movement upon the completion of a single cycle whereby renewed operation will require further actuation of said manually controlled means.

9. The device of claim 8 in which the movement initiating means aforesaid comprises a handle movable between advanced and retracted positions and biased to its retracted position and rams including cylinders and pistons respectively connected with the slide and the ejector die for the advance and retraction thereof and fluid pressure connections for the several ram cylinders and including valves for the sequential operation of the respective pistons to effect a cycle of movement of the mold slide and the ejector die.

10. The device of claim 8 in further combination with means for supporting a stack of inverted carton blanks beneath the advanced position of the slide to receive the work piece ejected therefrom by said knockout die, said means having an upward bias for elevating the stack as blanks are withdrawn from the top thereof.

11. The device of claim 8 in which said chamber comprises a movable wall in which said inlet port is disposed and with which said material supply means connects, together with a sealing element abutting said slide about said port and having marginal portions beveled toward said port to be forced by the pressure of said material against said slide.

12. The device of claim 8 in which said chamber comprises a channel having a bottom and upstanding sides between which said slide is reciprocable, said chamber further comprising a plate in which the pressure supply inlet port is disposed, the chamber sides having means for exerting pressure on said plate toward said slide.

13. The device of claim 12 in which the pressure exerting means comprises set screws bearing on said plate at widely spaced points adjacent the sides of the chamber, and means connected with such sides in which the set screws are threaded, together with retractable dowels disposed in the last mentioned means and for which said plate is provided with sockets in which the dowels are engaged.

14. The device of claim 13 in which the plate has an annular counterbore around its pressure supply inlet port, together with a packing extending about said port and disposed in the counterbore and having its inner margin beveled toward the counterbore.

15. An automatically cycling machine for producing molded articles in successive manually initiated cycles, said machine comprising a ported mould slide, a chamber in which such slide is mounted for reciprocation, said chamber having a pressure supply inlet port with which the port of the slide registers in a retracted slide position, a knockout die registrable with the slide port in an advanced slide position, means supporting such die for reciprocation to and from the slide port for the ejection of a work piece moulded therein, means communicating with the pressure port of said chamber for supplying plastic material to be moulded in the port of said slide, said chamber comprising a movable wall in which said inlet port is disposed and with which said material supplying means is connected.

16. The device of claim 15 in which said chamber is channel-shaped in cross section, having upstanding sides between which said movable wall is confined and between which said slide is reciprocable, and a channel-shaped liner for said chamber having flanges upstandable along the sides of the chamber adjacent the sides of the slide and having other flanges formed downwardly into engagement with the ends of the chamber for the positioning of the liner.

17. The device of claim 15 in which said wall has a counter recess about said inlet port and a packing member is positioned in the recess and has a central opening registering with said inlet port and beveled margins tapering to a thin edge at said opening whereby the pressure of said plastic material urges said margins to said slide.

18. A device of the character described comprising a base member with upstanding side walls constituting a channel, leg means supporting the base member, brackets on the side walls overhanging the channel, set screws threaded in the bracket, a slide reciprocable upon said base member between the side walls and provided with mould openings in transverse series, a pressure plate above the slide within the channel and engaged by said set screws, means securing the pressure plate detachably against reciprocation with such slide, the slide being movable beneath the plate between retracted and advanced positions, the plate having a supply aperture registering with the mould openings of the slide in the retracted slide position, a pressure supply pipe connected with the plate and communicating through said port with the mould openings in the slide in the retracted position of the latter, a cross head having means supporting it for reciprocation transversely of the path of slide movement, knockout die members mounted on the cross head and in a position to register with each of the mould openings of the slide in the advanced slide position, means for reciprocating the slide, means for reciprocating the cross head for the ejection of moulded material from the openings of the slide and means for catching ejected material.

19. The device of claim 18 in which said last mentioned means comprises a reciprocable table biased toward a cross head and adapted to receive a stack of material-receiving blanks.

20. The device of claim 18 in which said last mentioned means comprises a reciprocable table biased toward a cross head and adapted to receive a stack of material-receiving blanks, said table having parallel link supports disposed beneath the base and connected with said link and a spring biasing the link upwardly to maintain the uppermost blank on said table at a predetermined level respecting the slide, the device including stop means engaged by said uppermost blank to limit the upward movement of the table subject to said bias.

21. The combination with a mold chamber provided with top and bottom walls, one of which walls has a pressure supply opening, a slide reciprocable through said chamber between said walls, one of said walls being yieldably mounted and provided with means biasing it into pressure engagement with the slide, the slide having a plurality of mold cavities opening through the slide toward the top and bottom walls and positioned to register with the supply opening of said chamber in the course of slide reciprocation, a die carrier disposed beyond said chamber in the path of slide reciprocation, a set of dies mounted on the carrier in positions to register with the mold cavities of the slide, means guiding the carrier for vertical reciprocation with said dies for the movement of the dies substantially through the mold cavities of the slide to

eject the contents therefrom, and means for the support of a stack of blanks beneath said carrier in a position to receive the contents ejected from the several mold cavities in the operation of the carrier.

22. The device of claim 21 in which the means for the support of the stack of blanks comprises a yieldable bed, means urging said bed upwardly toward the path of reciprocation of the slide, a stop limiting the upward movement of the stack and bed and means for retracting the bed to free the uppermost blank of said stack from contact with said stop.

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